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TV RECEIVING URL FOR INTERNET ACCESS

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### Abstract

A display system receives (83) a data stream having data related to internet universal resource locator (URL) data in a data region of the frame region for continuous image frame data in the frame region, and displays continuous frames from the image frame data on a display monitor. The related data have one or several image entities in continuous frames correlated with one or several URLs; when the viewer selects the related image entity being displayed (99), the system accesses the internet (103); connection is made to the information source on the internet related to the URL, and the web page from the information source is downloaded (109) and the web page is displayed during the display process (111). Also, the viewer may access the related information while mutually conversing with the displayed web page. In order to display the relationship with a hidden URL, the entity may be highlighted during the display process.

### Claims

1. A type of varying signal that provides a display on a display monitor equipped with a first region containing image information with respect to a single frame for display, and a second region that contains information that correlates the visual entity being displayed provided by the information of said first region to an internet universal resource locator (URL) and that is separated from said first region.
2. The varying signal described in Claim 1, characterized by the fact that said second region also contains information that correlates said visual entity to a prescribed position of said single frame display.
3. The varying signal described in Claim 1, characterized by the fact that an analog television signal is contained in said first region.

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\* [Names and addresses of the applicant and inventor are transliterations.]

4. The varying signal described in Claim 1, characterized by the fact that digital television data are contained in said first region.

5. The varying signal described in Claim 1, characterized by the fact that it also contains information of said second region appropriate for visually highlighting said visual entity during said display.

6. The varying signal described in Claim 5, characterized by the fact that highlighting of said visual entity is performed by luminance and/or contrast.

7. The varying signal described in Claim 5, characterized by the fact that highlighting of said visual entity includes change in a color signal at the position of said visual entity.

8. A type of system for TV broadcast transmission of television programs and display characterized by the following facts:

the system has an information source for feeding a data stream, which has image frame data in one region and has the internet universal resource locator (URL) related to the image entity being displayed and provided by said image frame data in another region,

and a receiving/displaying device that receives said image frame and displays it on a display monitor and also has an internet browser;

said receiving/displaying device removes said URL from the region separated from the region containing said image frame data, starts said internet browser, accesses the worldwide web homepage related to said URL, and displays said homepage on said display monitor.

9. The system described in Claim 8, characterized by the fact that said URL is related to the image entity in the frame displayed from said image frame data.

10. The system described in Claim 8, characterized by the fact that said more than one entity being displayed is related to the URL.

11. The system described in Claim 9, characterized by the fact that said image entity is highlighted during said display to show the viewer that said image entity is related to the URL.

12. The system described in Claim 10, characterized by the fact that said highlighting is performed by means of adjustment of the luminance or contrast, by means of color adjustment, or by adding contour to said entity.

13. The system described in Claim 8, characterized by the fact that said information source is a broadcast transmitter that broadcasts TV signals.

14. The system described in Claim 8, characterized by the fact that said information source is a VCR that reproduces a video cassette recorder (VCR) tape.

15. The system described in Claim 8, characterized by the fact that said information source is a CD-ROM drive that reproduces a CD-ROM disk.

16. The system described in Claim 8, characterized by the fact that said information source is equipped with a computer device that retrieves the data stream from a hard disk drive.

17. The system described in Claim 8, characterized by the fact that said web page is displayed as an adjustable window that can be moved on said display monitor.

18. A type of receiving/displaying device characterized by the following facts:

it has a computerized controller,

a data stream receiving/processing circuit,

an internet browser,

a display circuit,

and a display monitor;

said receiving/processing circuit receives a data stream that has image frame data and an internet universal resource locator (URL) that identifies the internet information source, and feeds said image frame data to said display circuit and said URL to said controller;

said display circuit displays said image frame data on said display monitor;

and said controller accesses said internet, makes said browser access said internet information source, and downloads and displays the web page from said internet information source.

19. The device described in Claim 18, characterized by the fact that said URL is related to the prescribed entity image being displayed.

20. The device described in Claim 18, characterized by the fact that it contains plural URLs related to different prescribed entity images being displayed.

21. The device described in Claim 18, characterized by the fact that said web page is displayed as an adjustable window that can be moved on said display monitor.

22. A type of signal preparing/transmitting device characterized by the fact that it has an image device that monitors a scene and prepares a signal data stream containing image frame data from the scene,

and a controller that adds an internet universal resource locator (URL) to said data stream and correlates said URL to the image entity in one or several said image frames.

23. The device described in Claim 22, characterized by the fact that said controller adds more than one URL related to different image entities.

24. The device described in Claim 22, characterized by the fact that said controller adds data to said data stream and visually highlights said image entity being displayed provided by said data stream.

25. The device described in Claim 24, characterized by the fact that said highlighting is performed by means of adjustment of one or more of luminance, contrast and color.

26. A method that correlates an entity in a broadcast image to an internet universal resource locator (URL), characterized by the following steps:

(a) a step in which a data stream having frame data regions containing sequential frame data is prepared from a scene using a visual image device;

(b) a step in which said data for URL are inserted in a second region between said frame data regions; and

(c) a step in which in said second region between said frame data regions, the data that correlate a prescribed entity in an adjacent frame data region to said URL are inserted.

27. The method described in Claim 26, characterized by the fact that steps (b) and (c) are executed while prerecorded image data are edited.

28. The method described in Claim 26, characterized by the fact that steps (b) and (c) are executed automatically in a live broadcast by means of a computerized device adjusted by said visual image device.

29. The method described in Claim 26, characterized by the fact that in order to highlight said entity display, there is also a step in which data are inserted in said second region.

30. A method for correlating an entity in an image displayed from a broadcast data stream to an internet universal resource locator (URL), characterized by the following steps:

(a) a step in which an image frame obtained from a data stream having image frame data is displayed,

(b) a step in which data related to said URL are acquired from a data region separated from said image frame data and interleaved with said image frame data, and

(c) a step in which said entity in continuous image frames is formed as said related data and is correlated with said acquired URL.

31. The method described in Claim 30, characterized by the fact that it also has a step in which said entity in said continuous image frames is visually highlighted.

32. The method described in Claim 31, characterized by the fact that said highlighting is performed by adjustment of color, luminance and/or contrast in said display.

33. A method for accessing additional information related to an image entity in a video display, characterized by the following steps:

(a) a step in which a dynamic universal resource locator (URL) transmitted between frames in a data stream containing an image frame for said video display is correlated with said image entity,

(b) a step in which said entity on said video display is selected by means of user input,

(c) a step in which the internet is accessed as a response to said user input through a network interface module (NIM), and connection is performed to the data information source related to said URL,

(d) a step in which the web page is downloaded from said data information source, and

(e) a step in which said web page is displayed on said video display.

34. The method described in Claim 33, characterized by the fact that said web page is displayed as an adjustable window that can be moved on said video display.

35. The method described in Claim 33, characterized by the fact that said user selects by using a pointer device in manipulating and selecting a cursor.

36. The method described in Claim 33, characterized by the fact that plural image entities are correlated with unique URLs, respectively, and more than one web page is accessed and displayed by selecting more than one image entity.

### Detailed explanation of the invention

#### Field of the invention

The present invention pertains to a multimedia device and method. More specifically, the present invention pertains to a system that integrates internet access to TV transmission and display and provides an entity and similar data for display to a TV viewer.

#### Background of the present invention

Development of novel methods for distributing television and video display to end users and parallel development of the internet, the related worldwide web (WWW) and other computerized information systems have been pursued. As a result, efforts have been made to provide an information entertainment system with various systems unified and strengthened. For example, developers have introduced a unified system that combines TV and computer subsystems, so that a TV can be used as web browser.

Among the computer system structural elements of CPU, memory, and the like, some elements are assembled in a TV set chassis. For such a system, conventional TV structural elements and circuits are assembled together with computer structural elements, and the ability to switch modes is provided to the user. Consequently, by means of an appropriately equipped system, the user can select an analog TV program, digital TV program, conventional cable TV, satellite TV, and pay TV from various information sources. Similarly, the user can browse the WWW and display a web page, converse with a system related to the on-screen field, and jump to related information, a database, or another web page.

For several other systems, computer structural elements are set in an accommodating container known as a set-top box separate from the TV receiver. For a set-top box system, the provider is connected to a conventional TV set, so the end user has no need to purchase a new TV with built-in computer structural elements. This is an advantage for the provider.

For said unified system, either one in a single accommodating container or said set-top box system, the user can perform input by means of a hand-held device similar to a conventional remote controller by making IR communication between the remote controller and the

conventional set-top box or the receiver in a unified TV set. For web browsing or another computer mode, a cursor is displayed on the TV screen, and the cursor can be manipulated by means of buttons on the remote controller. Selection buttons are also set on the remote controller, and the computer user can execute conventional functions just like with the buttons on a conventional mouse or trackball or another pointer device.

The aforementioned set-top box and computer unified TV set usually have the input of a TV antenna (analog), cable TV (analog or digital), and the recently adopted direct satellite TV (digital), and a hard disk drive, CD-ROM drive or another large-capacity storage device is also connected. Video data are uploaded from said drive, and a function in displaying a dynamic result on the TV screen is exhibited.

The present inventors observed the following fact: by means of a combination of computer technology (digital) and TV technology, many functions that are familiar to computer users can also be performed by TV users, too. For example, the ability to provide a text subtitle for TV display is significantly strengthened. Picture-on-picture computer technology is now available. By means of the picture-on-picture scheme, the independent TV display becomes an independent window or overlay window on the display screen. The independent window can also support display of analog TV programs on one window, computer games on another window, and a teleconference on a third window, that is, it can support display of different data sources.

However, even when all of the available digital technologies are adopted, substantial separation is still present between the world of computers and the world of dynamic TVs. For example, consider the case when the end user demands certain information. For example, the viewer of a TV program may recognize an actor/actress. Although the viewer may not know the name of the actor/actress, the viewer may try to remember the name, or may want to collect further information about the actor/actress.

In the prior art, in this case, the user must wait until the list of actors/actresses appears at the end of the program. Then, the user writes down the name of the actor/actress and switches the mode to the browsing mode (assume that the system is a unified system). Then, the system accesses the WWW and searches the name of the actor/actress, or the name of the studio, the name of the program or another reference to get the desired information. When the desired information can be used at a certain site on the web page or in a related database, the user can expend some effort in getting the desired information.

There is another simple embodiment. Consider a TV advertisement. The viewer may be interested in an automobile or another specific item due to the advertisement, and may want to purchase the item or similar one. However, due to the fee charged for the network television advertisement and the resulting restriction on the time left for purchase after the advertisement time, detailed information that can be provided for purchasing the advertised item is definitely



restricted. Usually only the most prominent features can be provided, yet the purpose of the advertiser is to guide customers to their products, and they provide general price information.

For example, assume that there is an advertisement of a model of automobile. There is no way to provide all data about options, models, features, prices, payment schemes, as well as local information for test driving the car. In addition, even if all details are provided, the viewer has no way to write all of them down. The viewer may try to find good printed matter issued as an automobile lease advertisement.

In many cases, except for the case of TV shopping channels that are perceived to be unreliable by many people, a viewer who wants to buy an item that has been advertised on TV must expend significant effort to actually purchase the advertised item. In addition, many major manufacturers do not sell their products through TV shopping technology of the conventional viewer telephone participation type.

It is clear that there is a demand for development of a method and a device that can unify web browsing technology and TV broadcast technology to ensure that a viewer can quickly accumulate a large quantity of information about an entity that interests the viewer due to viewing of an advertisement in a TV broadcast program. In addition, there is a demand for development of a method that will allow a viewer to quickly and easily access detailed information about products advertised to the general public, as well as about interesting persons or items from the TV broadcast program.

#### Abstract of the invention

As a preferred embodiment of the present invention, the present invention provides a type of varying signal that provides a display on a display monitor equipped with a first region containing image information with respect to a single frame for display, and a second region that contains information that correlates the visual entity being displayed provided by the information of said first region to an internet universal resource locator (URL) and that is separated from said first region. Said second region also contains information that correlates said visual entity to a prescribed position of said single frame display. The signal of the first region may be either an analog or digital signal. The second region also contains information of contrast, luminance or a color signal, or any combination of them. By changing said combination, it is possible to strengthen the visual effect while the visual entity is displayed.

As another embodiment, the present invention provides a type of system for TV broadcast transmission and display of television programs, characterized by the following facts: the system has an information source for feeding a data stream, which has image frame data in one region and has the internet universal resource locator (URL) related to the image entity being displayed and provided by said image frame data in another region, and a receiving/displaying

device that receives said image frame and displays it on the display monitor and also has an internet browser; said receiving/displaying device removes said URL from the region separated from the region containing said image frame data, starts said internet browser, accesses the worldwide web homepage related to said URL, and displays said homepage on said display monitor.

For said system, said URL is related to the image entity in the frame displayed from said image frame data. Also, for said system, said more than one entity being displayed is related to the URL, or said image entity is highlighted during said display to show the viewer that said image entity is related to the URL. Said highlighting may be performed by means of adjustment of the luminance or contrast, by means of color adjustment, or by adding contour to said entity.

Said information source may be a broadcast transmitter that broadcasts a TV signal. Said information source may be a VCR that reproduces a videocassette recorder (VCR) tape. Also, said information source may be a CD-ROM drive that reproduces a CD-ROM disk. In addition, said information source may be equipped with a computer device that retrieves the data stream from a hard disk drive, and said web page may be displayed as an adjustable window that can be moved on said display monitor.

As another embodiment, the present invention provides a type of receiving/displaying device characterized by the following facts: it has a computerized controller, a data stream receiving/processing circuit, an internet browser, a display circuit, and a display monitor; said receiving/processing circuit receives a data stream that has image frame data and an internet universal resource locator (URL) that identifies the internet information source, and feeds said image frame data to said display circuit and said URL to said controller; said display circuit displays said image frame data on said display monitor; and said controller accesses said internet, makes said browser access said internet information source, and downloads and displays the web page from said internet information source.

For said receiving/displaying device, said URL is related to the prescribed entity image being displayed. The device contains plural URLs related to different prescribed entity images being displayed. For said device, as a preferable scheme, said web page is displayed as an adjustable window that can be moved on said display monitor. However, a display may also replace a preceding display.

As another scheme, the present invention provides a type of signal preparing/transmitting device characterized by the fact that it has an image device that monitors a scene and prepares a signal data stream containing image frame data from the scene, and a controller that adds an internet universal resource locator (URL) to said data stream and correlates said URL to the image entity in one or several said image frames. Said controller may add more than one URL related to different image entities. For said device, said controller may add data to said data

stream and visually highlight said image entity being displayed provided by said data stream. Said highlighting is performed by means of adjustment of one or more of luminance, contrast and color.

As another scheme, the present invention provides a method that correlates an entity in a broadcast image to an internet universal resource locator (URL), characterized by the following steps: (a) a step in which a data stream having frame data regions containing sequential frame data is prepared from a scene using a visual image device; (b) a step in which said data for URL are inserted in a second region between said frame data regions; and (c) a step in which the data that correlate a prescribed entity in an adjacent frame data region to said URL are inserted in said second region between said frame data regions.

In this method, steps (b) and (c) may be executed while prerecorded image data are edited, or these steps may be executed automatically in a live broadcast by means of a computerized device adjusted by said visual image device. Also, in order to highlight said entity display, there may also be a step in which data are inserted in said second region.

As another scheme, the present invention is a method for correlating an entity in an image displayed from a broadcast data stream to an internet universal resource locator (URL), characterized by the following steps: (a) a step in which an image frame obtained from a data stream having image frame data is displayed, (b) a step in which data related to said URL are acquired from a data region separate from said image frame data and interleaved with said image frame data, and (c) a step in which said entity in continuous image frames is formed as said related data and is correlated with said acquired URL.

This method may also have a step in which said entity in said continuous image frames is visually highlighted, and said highlighting may be performed by adjustment of color, luminance and/or contrast in said display.

As another scheme, the present invention provides a method for accessing additional information related to an image entity in a video display, characterized by the following steps: (a) a step in which a dynamic universal resource locator (URL) transmitted between frames in a data stream containing an image frame for said video display is correlated with said image entity, (b) a step in which said entity on said video display is selected by means of user input, (c) a step in which the internet is accessed as a response to said user input through a network interface module (NIM), and connection is performed to the data information source related to said URL, (d) a step in which the web page is downloaded from said data information source, and (e) a step in which said web page is displayed on said video display.

In said method, said web page may be displayed as an adjustable window that can be moved on said video display, and said user may select by using a pointer device in manipulating and selecting a cursor. In said method, plural image entities may be correlated with unique

URLs, respectively, and more than one web page is accessed and displayed by selecting more than one image entity.

The present invention, due to the various viewpoints and embodiments, can provide a high level of capability in a friendly manner, and it provides advertisers and promoters a novel tool for accessing information that has not formerly been provided by television or other video displays. Also, it can avoid a tedious task that takes a lot of time for the viewer when additional information is demanded for said display and representation.

#### Brief description of the figures

Figure 1 is a block diagram illustrating a set-top box used as the platform for embodiment of the present invention.

Figure 2A shows a TV display as an example of embodiment of the present invention.

Figure 2B is a diagram illustrating display of a data stream for transmitting the TV display in the embodiment of the present invention shown in Figure 2A.

Figure 2C is a diagram illustrating an example indicating the web page in the window of the TV display showing the results of embodiment of the present invention.

Figure 3A is a flow chart illustrating the steps in preparing a TV broadcast program according to the embodiment of the present invention.

Figure 3B is a flow chart illustrating the steps in which, according to the embodiment of the present invention, a TV broadcast is received with a dynamic URL, and access to the web page is started.

#### Explanation of preferred embodiments

According to the embodiment of the present invention, for the individual images of persons, objects, or the like displayed on TV, the viewer selects an image. As a result, by means of a method that calls out the linked URL, the universal resource locator (URL) is linked, and, by calling out the URL, it is guided to the web site where the information related to the image is provided. In many embodiments of the present invention, the image related to the URL is highlighted on the display by means of a special color or highlighted luminance (halo) or contour. Highlighting may also be performed in other forms.

Figure 1 is a block diagram illustrating set-top box (11) used for embodiment of the present invention. Said set-top box (11) is more complicated than is required for embodiment of the present invention in several embodiments. It has more functions, and it plays the role as a good type of platform in use.

Said set-top box (11) is used to receive a signal from any of various information sources, such as decoder/tuner (13), satellite link (15), cable TV line (17), and VCR input (16). In this

embodiment, 80486 CPU (19) provides the management and computing ability, and it is connected via link (21) to decoder/tuner (13). As another embodiment, another type of CPU may be used. Said decoder/tuner (13) receives and decodes a satellite signal on satellite link (15), TV signal on line (17), and VCR video signal on line (16).

In addition to the CPU and decoder/tuner, set-top box (11) includes motion picture expert group (MPEG) decoder (25). It translates the data fed to set-top box (11) in MPEG I or MPEG II format or a future format, and feeds the signal from the data to drive the TV or video monitor. Here, MPEG refers to an industry standard protocol for video data, and the technology is well known.

Said MPEG decoder (25) is connected by link (27) to CPU (19), and it is connected to decoder/tuner (13) by link (29). MPEG decoder (25) has a video graphics adaptor (VGA) chip containing video RAM (VRAM), and has output line (31) to chip set (33). The VGA chip set is appropriate for driving a TV screen or computer display screen via a conventional circuit. One may also use other types of video circuits.

Analog telephone modem (35) is connected to telephone line (37) and CPU (19), and it provides communication to a remote site for a pay-TV transaction, diagnosis, or download service. ISDN interface (39), optionally in this embodiment, connects optical digital data cable (41) and CPU (19) for digital phone communication. This may also be used in place of analog modem (35) or in addition to analog modem (35). There is also an optional interface for compact disk read-only memory (CD-ROM) drive (43) and hard disk drive (45). The modem shown here in the figure is convenient for use, and it is an example of a network interface module (NIM) used for internet access.

Said set-top box (11) has ROM (47) for a BIOS function or the like, and it also has dynamic random access memory (DRAM) (49). Operating code (48) stored in DRAM (49) provides the function for embodiment of the present invention, and it is received by any conventional method that can be executed while it can be accessed by CPU (19). Said operating code (48) contains a web browser and a routine for a prescribed functionality according to the embodiment of the present invention to be explained later. Said WWW browser is appropriate for accessing a server on the WWW, such as server (54) connected to link (37). Server (54) represents any web server dialed up through one of the modems related to the system shown in Figure 1.

For specialists in the computer field, the communication link shown in Figure 1 with respect to set-top box (11) is an example of data flow. It is clear that it does not show the type of prescribed link or bandwidth. For example, the type of CPU being explained is well known for communication on a parallel bus and has a bus cycle controlled by a bus controller for industry

standards, such as an ISA bus, EISA bus or the like. One may also use a universal serial bus (USB) or another type of communication link.

For the set-top box shown in Figure 1, said VGA circuit (33) has output links (20), (22) for driving TV (51) and/or computer display monitor (53), and one or both of them are displayed in various embodiments. There is also IR communication remote controller (63) that is appropriate for control and selection of a cursor by direction button (67) and selection button (69). IR communication remote controller (63) communicates with receiver (65) in the set-top box.

As well known technology, data stream transmission for display of an image on a display screen is performed by transmission of identifiable frames. This is a conventional feature for the transmission of both a prestored data stream and for live transmission by a transmission source, and for both digital and analog transmission. In any case, the specific technology is well known, and a detailed description is not necessary in the present specification.

In the transmission of each frame, as well known technology, the information is transmitted in the space between frames. For the digital transmission format, such data are expected, and since there is a blank line between frames in analog TV transmission, it may also be used for data transmission within space and time limits. This method is adopted for coding the information for creation of a color display of a black and white television display, such as a special caption for those with impaired hearing [sic].

In various embodiments of the present invention, one or several entity images in the transmitted frame are identified for a position and range in the frame, and the relationship with the WWW URL is determined. As a simplified example, for an advertisement of a brand of automobile, an icon or emblem may be displayed for each frame at a prescribed position in the frame. For example, said emblem may be a prescribed emblem adopted for an automobile brand, such as the well known Ford, Chevrolet, BMW or other emblems. The emblem is provided in the advertisement by any known conventional technology. Figure 2A depicts simplified frame (55) having BMW emblem (57) in the frame at a prescribed position with a prescribed area range.

In this embodiment, the BMW advertisement is a prerecorded advertisement indicating how many times it should be transmitted and displayed. It is a generally displayed advertisement between portions of a TV program. In the recording of the advertisement, for editing of the procedure for an existing prerecorded advertisement, the data are recorded such that they are transmitted between frames, the position and range of the BMW emblem in adjacent frames are identified, and the emblem is correlated with a prescribed WWW URL of the general form <http://www.bmw.com>. The URL is a locator on the WWW with respect to the home page provided on the web server maintained by BMW, and it is a site for accommodating additional detailed information with respect to what is provided in the transmitted advertisement.

As another embodiment of the present invention, different entities in the frame are correlated with different URLs, and the user is provided with different homepages on the web or different data positions on the same homepage. Just like an emblem, the automobile itself may be highlighted and correlated with an URL, and the URL of the automobile is guided to information of an up-to-date model. An example of this scheme is <http://www.bmw.com/latestmodel>.

Figure 2B is a diagram illustrating an example of data stream (59). The data for first frame (61) and second succeeding frame (65) are separated by data region (63). Said data region (63) contains data for identifying the position and range of BMW emblem (57) in first frame (61). Next data region (67) succeeds frame (65), and, similarly, the position and range of the BMW emblem in the frame are identified. Similarly, the URL related to the emblem is transmitted. In this way, each frame has its URL related to the correlated data region having the data of position and range of the image.

In a conventional receiving system that does not provide computer capability and does not unify with TV capability, since data are present between frames, the additional data containing the URL are not used, as they pass through in a transparent way. In such a conventional TV system, only the frame data are used. However, in the system of the type explained with reference to Figure 1 that has a computer function unified with the TV function, it is possible to use the data between frames in a special scheme.

In a system that has a CPU and memory and has a special control routine according to the present embodiment, the BMW emblem is handled as a conversation screen region in a method well known to a user of an access web page. For the computer system that has the TV circuit unified, cursor (70) is displayed on the screen, and this cursor (70) is positioned by the user by means of position button (67) of hand-held remote controller (63) (see Figure 1). In another system, the cursor is controlled by means of a pointer device or another convenient scheme.

Back to the example of the BMW advertisement, when the TV frame containing BMW emblem (57) is displayed, the viewer may start the cursor (one may also adopt a scheme in which the cursor is started automatically when the viewer manipulates one or another of position buttons (67)). According to the embodiment of the present invention, a special control routine is adopted, and data between frames are removed, and the control routine for identifying the position and area range of emblem (57) in the adjacent frames and the related URL is used.

When the viewer is interested in getting additional information, the viewer may manipulate the cursor to touch the region of emblem (57) and then may press down one of selection buttons (69) on the remote controller to start a selection signal. When the cursor touches the BMW emblem and the selection signal is received, the system executes a browser routine to access the WWW, and the web server explained above and maintained by BMW on the WWW (see server (54) and modem (35) or (39) shown in Figure 1) is dialed up. The URL in

the data region between frames for TV transmission and related to the BMW emblem is the WWW address for said dial-up operation.

Once the viewer starts the system of the present invention, connection is made to the web server of BMW, and action is performed with one of several methods. As an embodiment in this case, the TV display is stopped. Instead, the initial web page downloaded from the BMW server is displayed. As a preferable scheme, the TV display is continued, while as shown in Figure 2C, the downloaded web page is displayed on window (71) with respect to the TV display. In this way, window (71) is enlarged or contracted, and it can be moved on the screen, and can be closed anytime when required by the viewer. The conversation region on the window related to the additional information or the correlated web server, just like a page displayed on a computer monitor via a conventional web browser for a web page on a superimposed window, can be activated by means of cursor (70) and selection buttons (69). Scrolling capability is included by means of a scroll bar or the like as would be provided in a conventional scheme with a web page on the WWW. In several embodiments, a restriction on area is applied on the display rather than matching of the web page size to that of the display window, so that the web page can be maintained at a minimum size, and, when all web pages are displayed and the window is too small, the capability of scanning and panning as well known technology is provided for accessing an entire page.

The BMW web page shown on window (71) in Figure 2C is the inlet of information for accessing a large quantity of information through the WWW for the TV viewer, and it cannot be used in the original TV advertisement. Examples of the contents of the information include colors that can be used (together with the example), style of the car body (together with the paint), performance data, detailed price list, available sales lease period, sites near the viewer for meeting a dealer for a test drive, and various other data. If the system has an information display function for a demonstration video, reproduction is also possible for persons who have downloaded the demonstration video for watching. An even more important feature is that the viewer can access an included order sheet. As a result, the process for purchasing the car from the dealer becomes a user/buyer friendly process without any difficulty.

Assuming that the viewer can input text with a keyboard so that he can use the system freely in addition to simply accessing additional information, the bidirectional capability of the internet link allows transmission of information to the server by the viewer through an input field by means of web page access.

The aforementioned example of presentation of a BMW automobile advertisement is a specific example for adoption in the range of the present invention. As a modified example of this embodiment, the image region related to the URL may be an image of an automobile rather than the BMW emblem. The active image region can be driven to move for display of the TV



advertisement, and, by tracking the position and range of the screen for the interframe data, it is possible to adjust the movement of the cursor in real time on a dynamic picture.

In a method that also shows the viewer a related region for accessing information corresponding to the dynamic image in addition to tracking and adjusting the dynamic image, the dynamic image may be highlighted during display. This is realized by depicting a contour on the screen using a certain scheme, adjusting the luminance and/or contrast, variation in color, or their combination in any form.

In this way, according to embodiment of the present invention, any image of the TV broadcast program can be correlated with a dynamic URL for accessing additional information pertaining to the image.

As a minimum-scale embodiment, as explained above, the URL is correlated in the interframe region, and, when an image is selected, the URL is displayed as text information on the screen for notification of the viewer or copying. Also, the URL may be downloaded to a memory device for later print-out or browsing.

The list of applications and embodiments of the present invention is almost unlimited. The aforementioned BMW advertisement is a commercial application, and one can imagine numerous such commercial applications for advertisement.

As another embodiment, rather than an advertisement, an actor/actress may be correlated with an URL in a TV program. This URL guides the viewer to a web page that contains information indicating roles of the same actor/actress in other movies, biographical information, as well as applicability and selection of additional products (agents or the like). As another example, for politics, the present invention allows access from a political spot having an active region from the standpoint of the focus of an argument, the site of an upcoming rally or other activities. On the other hand, for sporting events, information for a prescribed athlete may be provided, and schedules, upcoming games, records, play-off position possibilities and similar information can be provided. Also, sports associations can provide season tickets prices and similar information, and tickets may be sold via internet links.

Figure 3A is a flow chart illustrating a procedure of operation with a device together with a data stream containing a dynamic URL correlated with an embodiment of the present invention.

In step 83, reception is performed for a data stream that transmits entity data and one or several dynamic URLs in a data region separated from the image frame data. Said one or several URLs are linked to the image entity by means of tabs. An URL is transmitted before (ahead of) the image, and it can be stored in a cache memory. Consequently, when plural pictures are to be displayed simultaneously, it is possible to allot more bandwidth to the entity with URL data taken as a control.

In step 85, the interframe data are removed and are provided to the computer structural elements in the receiving platform (see Figure 1). In step 87, according to the present embodiment of the present invention, the data are provided to the CPU that executes a dynamic URL control routine according to the embodiment of the present invention. Normal TV pictures are provided from the frame data in step 89 by means of conventional TV structural elements of the reception conversation system.

In step 91, data from the interframe region are processed for highlighting the identified entity. Here, highlighting is performed in step 93. In step 95, the viewer provides pointer input to activate the cursor on the TV screen. The input is processed in step 97. In step 99, the viewer moves the cursor to the area of the highlighted entity image. In step 101, the viewer starts the selection input, and this is processed in step 103. In step 105, the highlighted entity is selected. This selection starts web access by the computer structural elements in the receiving/displaying system.

In step 107, the network interface module (NIM) is initialized, dial-up is performed, and internet access is provided to the receiving system. The NIM may be an analog or digital modem, cable modem, satellite modem, either of computer network cards (10bT) and (100bT), a token ring or the like, as well as many other techniques for accessing the internet.

In step 109, the dynamic URL correlated with the highlighted entity is provided to the internet, and the related web page is downloaded. In step 111, the web page is displayed itself or is displayed on the window being displayed. In step 113, actions that may be performed by the viewer are displayed on the web page, and by means of any method known to specialists, the related information is selected, and jumping to the related site on the WWW occurs, followed by conversation with the web page. In step 115, the viewer turns OFF the web display by selecting the well known close box or with any available scheme known to the viewer.

As explained above, for an advertisement, delayed repeated program, or the like, display is mainly correlated with the prerecorded contents with respect to the TV display. For such feed materials, in order to correlate one or several images in the adjacent frames to an URL, editing is performed by adding the necessary number of bytes of information between frames to each frame. The method for performing such editing is well known to specialists of TV and data transmission technology. The same technology may also be used with VCR media, CD-ROM media at the same time. Known methods for recording and transmitting still or dynamic images for succeeding image displays are not excluded. For example, the MPEG data format contains a means for including such data.

Figure 3B is a flow chart illustrating the general steps in preparing a TV broadcast program with a dynamic URL according to an embodiment of the present invention. In step 73,

an entity, such as said BMW emblem in the aforementioned example, is identified in the scene as to whether it should be broadcast or correlated with a dynamic URL.

In step 75, the identified entity is correlated with an URL. Here, the URL is one with respect to a web page maintained for providing additional information correlated with the identified entity or a web page correlated with a TV broadcast using a conventional method.

In step 77, the position and the area range of the identified entity are often identified with respect to the broadcast frame pertaining to the geometric shape of the frame. That is, the position and range of the entity on the display screen are identified.

In step 79, the URL that correlates the data that define the position and area range of the identified entity to the entity are recorded in the data region from the image data with respect to the display frame in the data stream for broadcast. The separated data region is correlated with the frame.

In step 81, steps 1-4 are performed repeatedly with reference to all of the frames for which the entity should be correlated with the dynamic URL. In many cases, since one entity is repeated in a relatively large number of frames, the viewer has sufficient time to react to the dynamic entity for selection. For a single program or broadcast, several entities may be correlated with one or several URLs.

Any entity may be a candidate, and there are many possibilities. For example, persons may be selected, objects or man-made products may be selected, or an additional icon or image may be selected. In certain cases, the entity to be correlated with the identified URL is actually added to the scene by additional data in the same region as that used with respect to the URL. In certain embodiments, just as aforementioned, a single (point) position is identified with respect to the entity, a circular area, square area or another general area is correlated with the entity, and the general region should be the area selected by the viewer to start the dynamic URL.

The present invention is not limited to prerecorded edited image data. The effects of the present invention may also be displayed using the unique method for sports events or similar live broadcasts. In a live broadcast, the interframe data, including the URL correlated with the image should be essentially inserted in real time or inserted with a minimum delay. This means that for the camera and transmitter as the processor of the correlated images and data, a method should be present to determine which depicted object or person is the object or person related to the URL, and the device must produce data that should be inserted in each frame.

In order to realize a real-time live broadcast with a dynamic URL, it is sufficient that the relationship and position of the object or person to be correlated with the URL is notified to an independent image device. In certain embodiments, this device takes the form of an IR transmitter or wireless beacon transmitter or similar broadcast device.

The explained broadcast device can attain two substantial objectives in transmission to the image device. The first thing is the position, and the position and area range data in the interframe region corresponding to said information is inserted in the image device, and the second thing is the URL itself. Since the URL is shared for events other than objects and persons, the URL may be automatically inserted in this embodiment. In other embodiments, a prescribed URL is added with respect to a tracked object or person. In the case of a real-time live broadcast, the aforementioned technology in which the point position is identified and the standard area range is inserted provides a convenient method.

There are many convenient methods by which a TV camera or another device can provide the necessary information, including the dynamic URL, for the depicted persons and objects. Said IR and wireless beacon are merely two examples among many types. In one embodiment, a bar code may be applied to clothes of players, and said bar code can be read by the image device. As another embodiment, one may also use X-rays, a UHF broadcast or other substitute broadcast technologies. Any method for transmitting information to the remote side may be adopted.

Specialists may adopt various substitute embodiments as embodiments of the present invention as long as the gist and range of the present invention are observed. For example, with reference to Figure 1, various types of devices may be adopted appropriately in embodiment of the present invention. For embodiment of the present invention, in all cases, not all of the structural elements shown in Figure 1 are necessary, and only certain selected structural elements in the embodiment are needed. For example, it is not necessary to have a CD-ROM drive and hard disk drive in all embodiments, yet these drives are used in some embodiments.

In addition to the aforementioned, the TV broadcast from any one remote site may be a live broadcast or a broadcast of prerecorded programs, as explained in the aforementioned embodiments. However, the present invention may also be adopted using the following scheme: other methods for feeding a TV signal to a display, methods with a unifying capability as a response to a dynamic URL. For example, by means of a signal stored in a hard disk drive, or by means of a signal provided to a CD-ROM disk for reproduction by the CD-ROM drive shown in Figure 1, a TV program having a correlated URL is provided to a videotape used in a VCR. The present invention is very broad since it includes any means for providing a signal for TV display, and, by means of a signal unified with a dynamic URL, the user browses the internet WWW, and, as a result, conversation is possible with a highlighted entity in a frame of the TV display.

In addition, in order to remove the interframe data and to execute browsing as a response to a dynamic URL, many methods can provide the functionality of the necessary control routine for said device. It is well known in computer technology that a prescribed functionality can be

provided by a control routine written by various methods. As a unique feature, instead of a prescribed order of a code, functionality exists in providing code to the device.

In the above, several embodiments were explained. However, the present invention can be adopted in many potential applications. Application of the present invention in such case is taken as a novel embodiment of the present invention instead of another new invention.

In addition, there are many formats for display of a web page while a TV program is simultaneously displayed. There are many modified examples that can simply verify the range of the present invention.

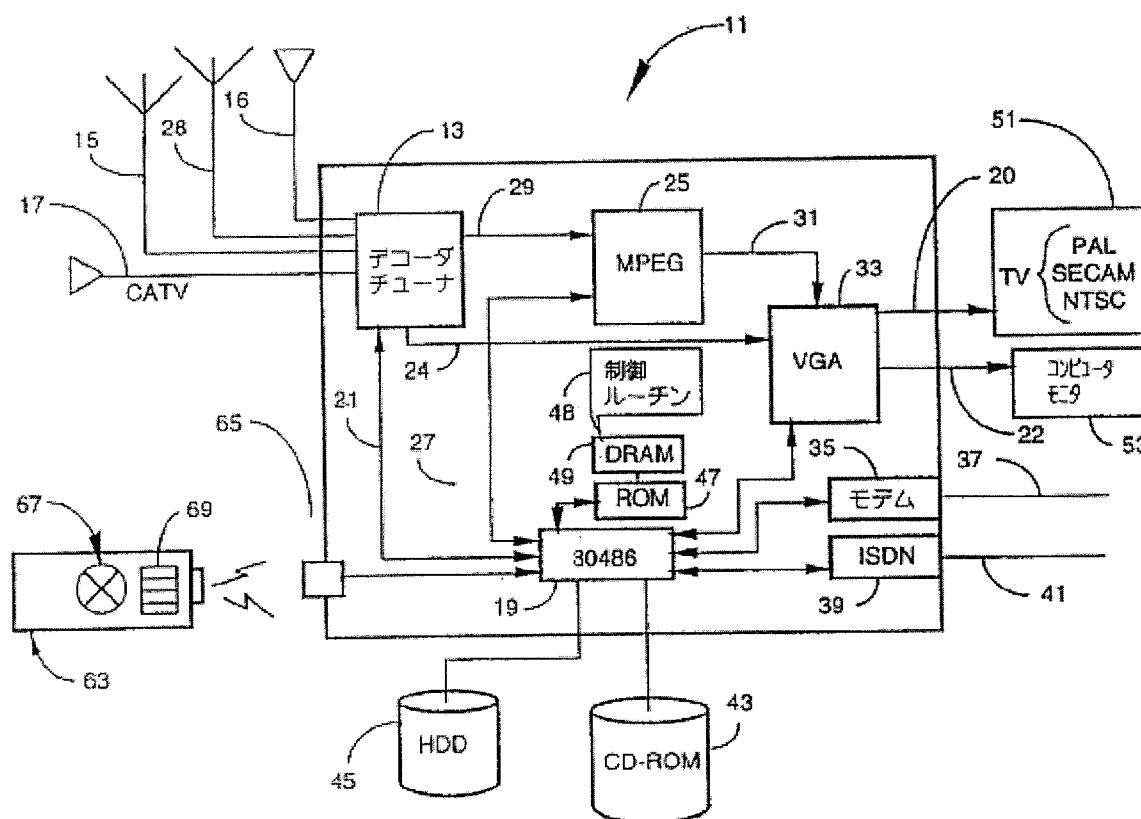


Figure 1

Key:	13	Decoder/tuner
	35	Modem
	48	Control routine
	53	Computer monitor

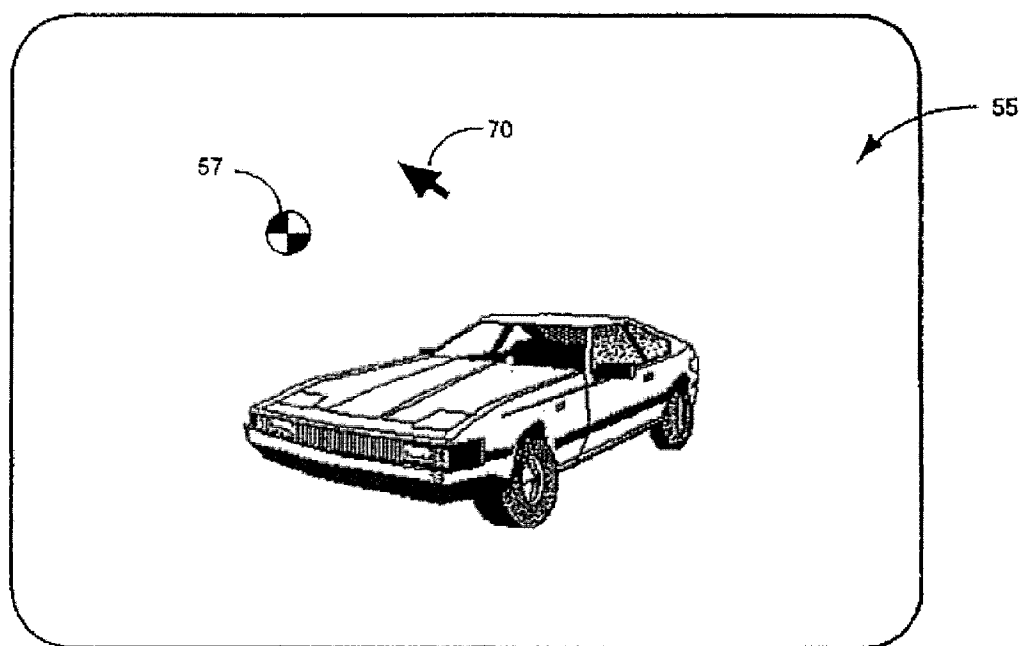


Figure 2A

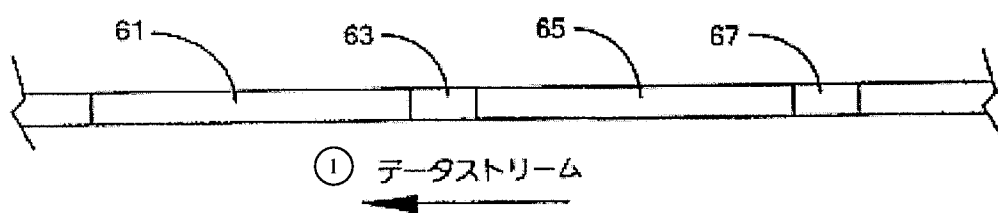


Figure 2B

Key: 1 Data stream



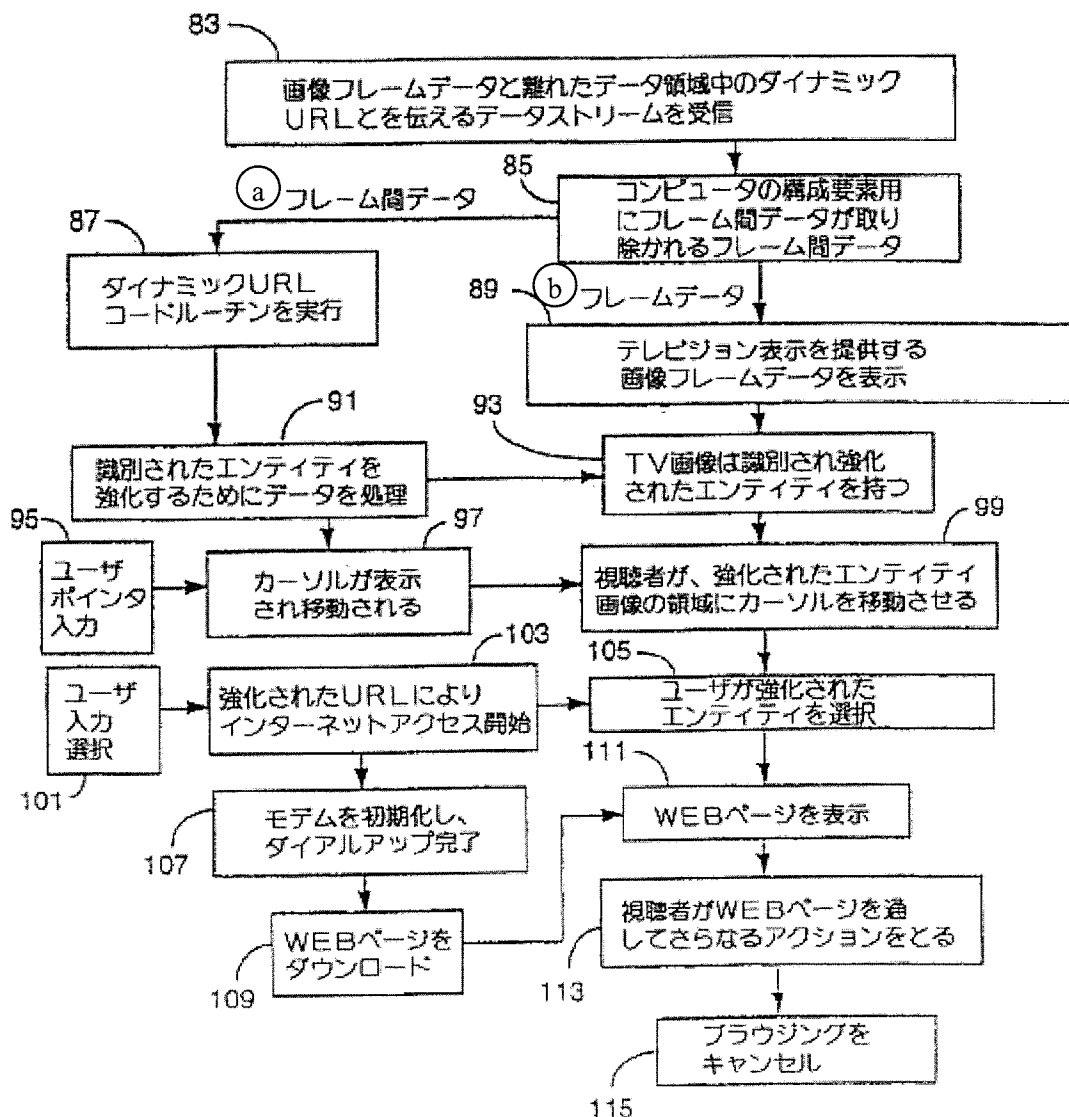


Figure 3A

- Key:
- a Interframe data
  - b Frame data
  - 83 Reception of a data stream that transmits image frame data and a dynamic URL in separate data regions
  - 85 Interframe data excluding the interframe data for the structural elements of computer
  - 87 Execution of dynamic URL code routine
  - 89 Display of image frame data providing television display
  - 91 Processing of data for highlighting identified entity
  - 93 Holding of entity with TV image identified and highlighted
  - 95 User pointer input
  - 97 Display and move cursor
  - 99 Viewer moves cursor to a highlighted entity image region



- 101 Selection of input by user
- 103 Start of internet access by means of highlighted URL
- 105 Selection of highlighted entity by the user
- 107 Initialization of modem and completion of dial-up
- 109 Download of web page
- 111 Display of web page
- 113 Action taken by viewer via web page
- 115 Cancel browsing

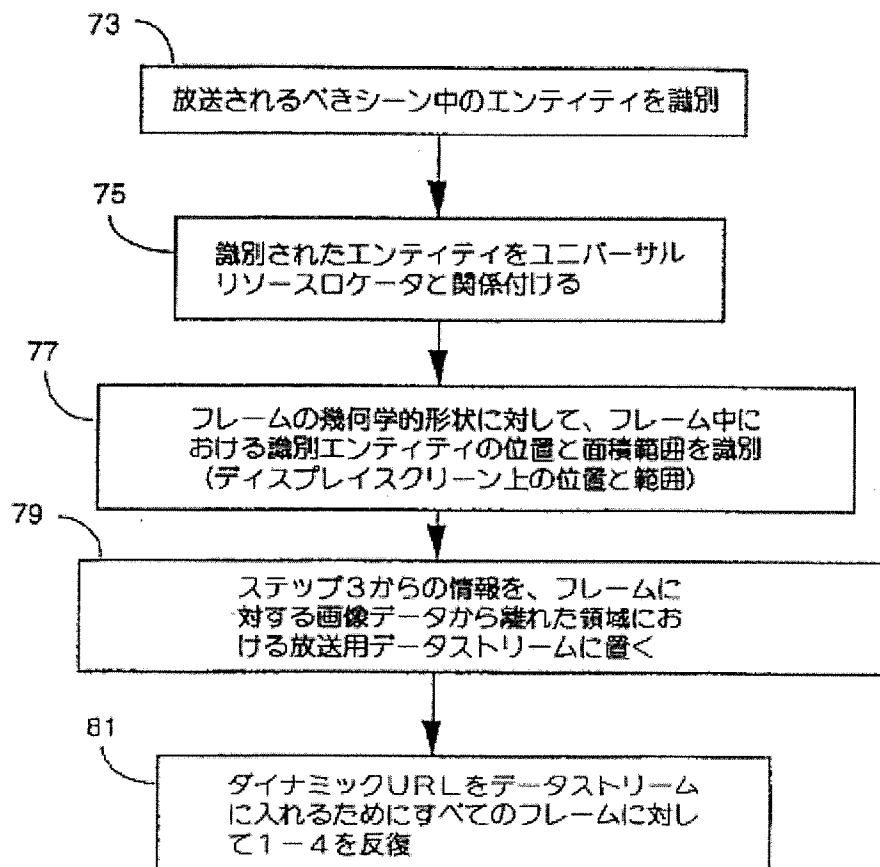


Figure 3B

- Key:
- 73 Identification of entity in page to be broadcast
  - 75 Correlation of identified entity to universal resource locator
  - 77 Identification of position and area range of identified entity in frame with respect to geometric shape of the frame (position and range on display screen)
  - 79 Setting of the information from step 3 in the broadcast data stream in the region separate from the image data with respect to the frame
  - 81 Repeat 1-4 with respect to all of the frames with the dynamic URL in the data stream

## INTERNATIONAL SEARCH REPORT

 International application No.  
 PCT/US97/07493

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : H04N 7/16

US CL : 348/13, 10, 6; 455/6.1, 6.2, 6.3

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	INTERNET WEEK "Joining Television And The Internet Using Java", V.2 NO. 14, Published 01 April 1996 3 pages.	1-4,8-10, 13-23,26-30 33-36
Y	US 5,418,576 A (ROSS) 23 May 1995 col. 1, line 65 - col. 2, line 45, col. 5, lines 20-25	5-7,11,12, 24,25,31,32
A, P	US 5,570,295 A (ISENBERG ET AL.) 29 OCTOBER 1996, abstract, figures 1-4	5-7,11,12 24,25,31 32
A,E	US 5,640,193 A (WELLNER) 17 June 1997 abstract, figures 1-2	1-36 1-36

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	* " later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
* "A" document defining the general state of the art which is not considered to be of particular substance	* "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
* "B" earlier document published on or after the international filing date	* "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
* "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	* "Z" document member of the same patent family
* "O" document referring to an oral disclosure, use, exhibition or other means	
* "P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

21 JULY 1997

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/07493

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, 5,438,355 A (PALMER) 01 August 1995 abstract, figures 1-2	1-36

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/07493

**B. FIELDS SEARCHED**

Minimum documentation searched

Classification System: U.S.

348/13, 12, 10, 7, 6, 1, 686, 678, 687, 563, 564; 455/6.1, 6.2, 6.3, 5.1, 4.2, 3.1, 2;  
H04N 7/16, 7/173

**B. FIELDS SEARCHED**

Electronic data bases consulted (Name of data base and where practicable terms used):

APS, DIALOG

search terms: URL OR (UNIFORM OR UNIVERSAL) RESOURCE LOCAT?

TV OR TELEVISION

INTERNET OR WWW OR WORLD WIDE WEB